DOE Initiative in Emission Control Byproducts: A Government - Industry Consortium

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The U.S. Department of Energy, Federal Energy Technology Center (DOE-FETC) has an ongoing research and development program dedicated toward the utilization of coal combustion by-products (CCB's). Prior to 1997, major emphasis had been placed on the CCB's that were associated with DOE's Clean Coal Technology Program, with the goal of developing information and technology that would maximize the potential for utilization of these CCB's and minimize the potential for unforeseen problems during their handling and disposal. Projects were directed toward one of five primary technical areas: characterization, high-value utilization, beneficial land application, underground mine emplacement, and disposal. FETC had also conducted in-house research on the removal of unburned carbon from fly ash, and development of utilization applications for the high-carbon fraction resulting from ash separations.

Despite the demonstrated capability of newer, Clean Coal technologies to meet future power and environmental demands, the electric power industry's response to the 1990 Clean Air Act has been to increase the levels of environmental control at existing plants which produce "conventional" CCB's such as fly ash, bottom ash, and wet FGD sludge. For example, the industry's response to the Act's mandate to reduce emissions of nitrogen oxides has been to install low-NO_x burners; the fly ash produced from these burners can have unburned carbon contents which render the ash unsuitable for use in cement manufacture. This has eliminated a source of revenue for power producers and increased the total cost of their by-product management operations. Also, the response of many major utilities to SO_2 emissions requirements has been to accelerate the use of wet FGD devices rather than switch to "clean" coal combustion technologies. The result has been an excessive growth in the production of wet FGD material that is outpacing the utilities' capacity to utilize the material. The American Coal Ash Association (1997) has estimated that less than 7% of the FGD by-product is currently being utilized. Concurrently, the implementation of increasingly stringent solid waste disposal regulations at the state and local level have increased the cost of developing new landfill capacity for all CCB's. Therefore, the DOE-FETC CCB Utilization Program has broadened its scope to include projects that investigate the environmentally beneficial utilization of wet FGD by-products, high-LOI ashes, and other utility by-products for which commercial markets have not been well-developed.

A key component in the future of the DOE-FETC CCB Utilization Program is the Emission Control Byproducts Consortium. The Consortium will be managed as a private, non-profit entity by West

Virginia University, with primary financial support by DOE-FETC.. Additional sponsorship will be sought from other Government agencies and industry organizations. The Consortium Steering Committee, which will consist of members of Government agencies and industry organizations that have an interest in the increased utilization of CCB's, will define research priorities, recommend research projects for funding, and report on the results of the Consortium activities to DOE-FETC. A set of Technical Committees, consisting of industry, academic, and Government personnel with specific technical expertise in CCB utilization, will develop RFP's in the priority areas identified by the Steering Committee, review and rank proposals, review technical progress on individual projects, and report important results to the Steering Committee. The Consortium managers will organize Committee meetings, attract new members, and handle all contracting and reporting paperwork associated with individual projects.

The primary advantage of the Consortium is that it provides a structure (Steering Committee) by which the needs of both industry and Government can be addressed when defining research priorities. In addition, the Technical Committees will ensure that the research is of the highest quality and does not duplicate past or current efforts. Innovative ideas for CCB utilization can be pursued more readily because the risk associated with the financial support of these ideas will be shared among Consortium participants. Organizational activities for the Consortium are currently underway; DOE-FETC funding for research projects is expected to be available beginning in Fiscal Year 1999.